

What is claimed is:

1. A filter assembly for filtering a fluid, said filter assembly comprising:

a substantially annular filter element having first and second ends;

5 a filter housing containing said filter element, said filter housing having a first end, a second end and a substantially cylindrical side wall defining an annular space between said side wall and said filter element;

an end plate secured to said first end of said filter housing, said end plate having at least one fluid inlet therethrough adjacent to said first end of said filter element so that said
10 fluid enters said filter housing through said at least one fluid inlet and flows into said annular space; and

a directional fluid insert having at least one of fin disposed between said first end of said filter element and said end plate, said at least one of fin provided to cause said fluid entering said filter housing through said at least one fluid inlet to swirl around said filter
15 element.

2. The filter assembly as defined in claim 1, wherein said end plate is permanently secured to said first end of said filter housing.

20 3. The filter assembly as defined in claim 1, wherein said end plate is further provided with at least one fluid outlet therethrough.

4. The filter assembly as defined in 1, wherein a directional fluid insert with said at least one fin is formed as a single-piece plastic molding.

5 5. The filter assembly as defined in claim 1, wherein said directional fluid insert is attached to said first end of said filter element.

6. The filter assembly as defined in claim 5, wherein said directional fluid insert includes a snap fit coupling for securing said directional fluid insert to said first end of said filter element.

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7. The filter assembly as defined in claim 6, wherein said snap fit coupling includes a plurality of flexible mounting tabs formed integrally with and axially extending from said directional fluid insert.

15 8. The filter assembly as defined in claim 1, wherein said at least one fin of said directional fluid insert has a substantially curved fluid deflecting surface.

9. The filter assembly as defined in claim 1, wherein said at least one fin of said directional fluid insert has a substantially flat fluid deflecting surface canted at an angle with respect to a central axis of said filter assembly.

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10. The filter assembly as defined in claim 1, wherein said at least one fin of said directional fluid insert is in the form of a continuous spiral strip.

11. The filter assembly as defined in claim 1, wherein said directional fluid insert includes a substantially annular base ring formed integrally with a plurality of fins provided to cause said fluid entering said filter housing through said at least one fluid inlet to swirl around said filter element.

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12. The filter assembly as defined in claim 11, wherein said directional fluid insert is attached to said first end of said filter element by a snap fit coupling including a plurality of flexible mounting tabs formed integrally with and axially extending from said fins.

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13. The filter assembly as defined in claim 11, wherein said plurality of said fins extend substantially radially from said base ring.

14. The filter assembly as defined in claim 11, wherein said directional fluid insert further includes a substantially annular outer ring connected to said base ring.

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15. The filter assembly as defined in claim 14, wherein said directional fluid insert is attached to said first end of said filter element by a snap fit coupling including a plurality of flexible mounting tabs formed integrally with and axially extending from said outer ring.

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16. A filter assembly for filtering a fluid, said filter assembly comprising:
a substantially annular filter element having first and second ends;
a filter housing containing said filter element, said filter housing having a first end, a second end and a substantially cylindrical side wall defining an annular space between said

side wall and said filter element;

an end plate permanently secured to said first end of said filter housing, said end plate having a central fluid outlet and a plurality of fluid inlets therethrough adjacent to said first end of said filter element so that said fluid enters said filter housing through said fluid inlets and flows into said annular space; and

a directional fluid insert having a substantially annular base ring formed integrally with a plurality of fins extending substantially radially from said base ring and disposed between said first end of said filter element and said end plate in order to cause said fluid entering said filter housing through said fluid inlets to swirl around said filter element, each of said fins of said directional fluid insert having a substantially curved fluid deflecting surface;

said directional fluid insert is attached to said first end of said filter element by a snap fit coupling including a plurality of flexible mounting tabs formed integrally with and axially extending from said fins;

wherein said directional fluid insert is formed as a single-piece plastic molding including said snap fit coupling.

17. A filter assembly for filtering a fluid, said filter assembly comprising:

a substantially annular filter element having first and second ends;

a filter housing containing said filter element, said filter housing having a first end, a second end and a substantially cylindrical side wall defining an annular space between said side wall and said filter element;

an end plate permanently secured to said first end of said filter housing, said end plate having a central fluid outlet and a plurality of fluid inlets therethrough adjacent to said first

end of said filter element so that said fluid enters said filter housing through said fluid inlets and flows into said annular space; and

a directional fluid insert having a substantially annular base ring formed integrally with a plurality of fins extending substantially radially from said base ring and a substantially
5 annular outer ring substantially concentric to said base ring and connected thereto by a plurality of substantially radial ridges;

said plurality of said fins being disposed between said first end of said filter element and said end plate in order to cause said fluid entering said filter housing through said fluid inlets to swirl around said filter element, each of said fins of said directional fluid insert
10 having a substantially flat fluid deflecting surface canted at an angle with respect to a central axis of said filter assembly;

wherein said directional fluid insert is attached to said first end of said filter element by a snap fit coupling including a plurality of flexible mounting tabs formed integrally with and axially extending from said outer ring;

15 wherein said directional fluid insert is formed as a single-piece plastic molding including said snap fit coupling.